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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/715,628	11/17/2003	Garo J. Derderian	MI22-2427	4321

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EXAMINER

ZERVIGON, RUDY

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 09/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/715,628

Applicant(s)

DERDERIAN ET AL.

Examiner

Rudy Zervigon

Art Unit

1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 28 July 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>All</u> .   | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-6 are rejected under 35 U.S.C. 102(b) as being anticipated by Lee; Chung J. et al. (US 6,086,679 A). Lee teaches a deposition system (Figure 5; column 14; lines 24-50) comprising: a deposition chamber (520; Figure 5; column 14; lines 24-50) having an inlet port (516; Figure 5; column 14; lines 24-50); a first reservoir (524; Figure 5; column 14; lines 24-50) configured for containment of a first metastable specie, the first reservoir (524; Figure 5; column 14; lines 24-50) comprising an outlet port in selective fluid communication with the inlet port (516; Figure 5; column 14; lines 24-50) of the deposition chamber (520; Figure 5; column 14; lines 24-50); and a metastable-specie generating catalyst (528; Figure 5; column 14; lines 24-50) within the first reservoir (524; Figure 5; column 14; lines 24-50), as claimed by claim 1. Applicant's claim 1 requirement of "a metastable-specie" is a claim requirement of intended use. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of

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performing the intended use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto, 136 USPQ 458, 459 (CCPA 1963); MPEP 2111.02).

Lee further teaches:

- i. The deposition system (Figure 5; column 14; lines 24-50) of claim 1 wherein the catalyst (528; Figure 5; column 14; lines 24-50) comprises Pt (column 19; lines 33-41), as claimed by claim 2
- ii. The deposition system (Figure 5; column 14; lines 24-50) of claim 1 wherein the catalyst (528; Figure 5; column 14; lines 24-50) comprises Zn (column 19; lines 33-41), as claimed by claim 3
- iii. The deposition system (Figure 5; column 14; lines 24-50) of claim 1 further comprising a heat source (532; Figure 5) configured to heat the catalyst (528; Figure 5; column 14; lines 24-50), as claimed by claim 4
- iv. The deposition system (Figure 5; column 14; lines 24-50) of claim 1 further comprising a carrier gas source (504; Figure 5) in selective fluid communication with the deposition chamber (520; Figure 5; column 14; lines 24-50) through the inlet port (516; Figure 5; column 14; lines 24-50), as claimed by claim 5. Applicant's claim requirement of a gas identity being a "carrier gas" is a claim requirement of intended use. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter, 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is

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capable of performing the intended use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto, 136 USPQ 458, 459 (CCPA 1963); MPEP 2111.02).

- v. The deposition system (Figure 5; column 14; lines 24-50) of claim 1 further comprising: a substrate platform (544; Figure 5); and a dispersion head (536; Figure 5) between the inlet port (516; Figure 5; column 14; lines 24-50) and the substrate platform (544; Figure 5), as claimed by claim 6

***Claim Rejections - 35 USC § 103***

- 3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

- 4. Claims 7-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee; Chung J. et al. (US 6,086,679 A). Lee is discussed above. Lee does not teach plural reservoirs ("second volume"), plural inlet ports:

Lee does not teach:

- i. Lee's deposition system (Figure 5; column 14; lines 24-50) of claim 1 further comprising: a second reservoir configured for containment of a second metastable specie, the second reservoir comprising a second reservoir outlet port in selective fluid communication with Lee's deposition chamber (520; Figure 5; column 14; lines 24-50), as claimed by claim 7
- ii. Lee's deposition system (Figure 5; column 14; lines 24-50) of claim 7 wherein Lee's inlet port (516; Figure 5; column 14; lines 24-50) of Lee's deposition chamber (520; Figure 5;

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- column 14; lines 24-50) is a first inlet port (516; Figure 5; column 14; lines 24-50), Lee's deposition chamber (520; Figure 5; column 14; lines 24-50) further comprising a second inlet port, wherein the outlet port of the second reservoir is in selective fluid communication with Lee's deposition chamber (520; Figure 5; column 14; lines 24-50) through the second inlet port, as claimed by claim 8
- iii. Lee's deposition system (Figure 5; column 14; lines 24-50) of claim 7 wherein Lee's metastable-specie generating catalyst (528; Figure 5; column 14; lines 24-50) is a first metastable-specie generating catalyst (528; Figure 5; column 14; lines 24-50), and further comprising a second metastable-specie generating catalyst (528; Figure 5; column 14; lines 24-50) within the second reservoir, as claimed by claim 9
- iv. Lee's deposition system (Figure 5; column 14; lines 24-50) of claim 7 further comprising a carrier gas source (504; Figure 5) in selective fluid communication with Lee's deposition chamber (520; Figure 5; column 14; lines 24-50) through the second inlet port, as claimed by claim 10
- v. Lee's deposition system (Figure 5; column 14; lines 24-50) of claim 7 further comprising: the remote metastable specie source (630; Figure 6), wherein the second reservoir comprises an inlet port (516; Figure 5; column 14; lines 24-50) in fluid communication with Lee's remote metastable specie source (630; Figure 6), as claimed by claim 11
- vi. Lee's deposition system (Figure 5; column 14; lines 24-50) of claim 11 wherein Lee's remote metastable specie source (630; Figure 6) comprises a metastable specie generator comprising one or more of a plasma source, a catalyst (528; Figure 5; column 14; lines 24-

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- 50), a heater, an electron gun, a UV light source and a microwave source, as claimed by claim 12
- vii. A deposition apparatus comprising: a deposition chamber (520; Figure 5; column 14; lines 24-50) having a first volume (524); at least one containment reservoir fluidly connected to Lee's deposition chamber (520; Figure 5; column 14; lines 24-50) and having a second volume, Lee's second volume at least about 1% of Lee's first volume (524); a remote metastable specie source (630; Figure 6) in fluid communication with at least one of the containment reservoirs, as claimed by claim 13
- viii. The apparatus of claim 13 wherein the second volume is greater than or equal to about 10% of Lee's first volume (524), as claimed by claim 14
- ix. The apparatus of claim 13 wherein Lee's second volume is greater than or equal to about 50% of Lee's first volume (524), as claimed by claim 15
- x. The apparatus of claim 13 wherein Lee's second volume is equal to or greater than Lee's first volume (524), as claimed by claim 16
- xi. An atomic layer deposition apparatus comprising: a deposition chamber (520; Figure 5; column 14; lines 24-50) having a first inlet, a second inlet, a dispersion head (536; Figure 5), and a substrate platform (544; Figure 5); Lee's dispersion head (536; Figure 5) being positioned between Lee's first inlet and Lee's substrate platform (544; Figure 5) and between the second inlet and Lee's substrate platform (544; Figure 5); a first activated specie containment reservoir in fluid communication with Lee's deposition chamber (520; Figure 5; column 14; lines 24-50) through Lee's first inlet; a second activated specie containment reservoir in fluid communication with Lee's deposition chamber

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(520; Figure 5; column 14; lines 24-50) through the second inlet; and one or more carrier gas sources (504; Figure 5) configured to deliver carrier gas through at least one of Lee's first inlet and the second inlet, as claimed by claim 17. Applicant's claim requirement of "An atomic layer deposition apparatus" is a claim requirement of intended use. Additionally, when the structure recited in the reference is substantially identical to that of the claims, claimed properties or functions are presumed to be inherent (*In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977); MPEP 2112.01). Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (*Walter*, 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (*In re Casey*, 152 USPQ 235 (CCPA 1967); *In re Otto*, 136 USPQ 458, 459 (CCPA 1963); MPEP 2111.02).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to reproduce Lee's reservoirs and inlet ports under optimal relative dimensions.

Motivation to reproduce Lee's reservoirs and inlet ports under optimal relative dimensions is for increasing processing speed and throughput. Further, it is well established that the duplication of parts is obvious (*In re Harza*, 274 F.2d 669, 124 USPQ 378 (CCPA 1960) MPEP 2144.04). Further it is well established that changes in apparatus dimensions are within the level of ordinary skill in the art. (*Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984); *In re Rose*, 220 F.2d 459, 105

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USPQ 237 (CCPA 1955); In re Rinehart, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976); See MPEP 2144.04)

***Conclusion***

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Rudy Zervigon whose telephone number is (571) 272.1442. The examiner can normally be reached on a Monday through Thursday schedule from 8am through 7pm. The official fax phone number for the 1763 art unit is (703) 872-9306. Any Inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Chemical and Materials Engineering art unit receptionist at (571) 272-1700. If the examiner can not be reached please contact the examiner's supervisor, Parviz Hassanzadeh, at (571) 272-1435.

Handwritten signature of Rudy Zervigon, consisting of a stylized 'RZ' followed by 'Zervigon' and a date '10/6/5'.